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ABSTRACT

A study using four groups, each of 25 first graders, indicated that letter-naming ability does not facilitate learning to read words composed of the same letters. One group was taught to discriminate between four artificial graphemes by identifying them with different geometric forms. The second group was taught to give the graphemes the letter names "S," "M," "E," and "A." Two control groups were used, one with the related task of learning the names for animal pictures. All four groups were tested, and the mean number of times it took each subject to complete a perfect trial of saying four words made up from the graphemes was recorded. The compared results indicated no significant differences between the performances of the groups and did not support the results of many correlational studies. When the experiment was repeated 1 year later lumping the control groups, the results were again insignificant. It was concluded that a 1967 study presenting the same four graphemes with left-right reading, phonic blend, and letter-sound training indicated a more meaningful correlation between letter-sound identification and reading ability acquisition; it was suggested that the social-economic status of a child may explain the meaningful relationship found between letter-name knowledge and reading ability acquisition in other studies. References are included. (BT)

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LETTER-NAME VERSUS LETTER-SOUND KNOWLEDGE AS FACTORS INFLUENCING LEARNING TO READ

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There appears to be considerable interest at the present time in teaching children to name letters of the alphabet in the belief that letter-name knowledge facilitates learning to read. This interest is manifest at the kindergarten level where instruction in naming letters is given as part of the reading readiness program. Sesame Street, the federally sponsored television program for preschoolers, also includes instruction in letter naming. Durrell and Murphy (1964, p. 143) claim that "Most letter-names contain their sounds, and this assists the child in relating the phoneme in the spoken word to its form in print. Children who know letter-names learn words more readily..."

Belief that letter-name knowledge facilitates learning to read has a longer history than most of us would suspect. The purpose of this paper is to explore the origin of this belief and to test the validity of the assumption.

In Huey's (1908, p. 265) chapter on methods in elementary reading, he wrote that: "The alphabet method, used almost universally in Greece and Rome, and in European countries generally until well into the nineteenth century, and which was nearly universal in America until about 1870, is now chiefly of historical interest." The alphabet method as practiced in

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Europe and this continent taught the child to learn the names of the letters before learning to read words. Nonsense syllables like ab, ib, ob were spelled and pronounced, progressing to three letters, short, words, then sentences. Naming the letters generally preceded pronouncing the word.

During Huey's day the controversy in reading was not over phonic versus look-say methods, but over the alphabet versus the look-say methods. By 1870, the conflict appeared to be settled in favor of the look-say method. Like a pendulum swinging, we can see the alphabet letter-naming method re-appearing on the American scene in yet another form.

The current belief that letter-name knowledge facilitates learning to read probably originates with the numerous studies which find a high positive correlation between letter-name knowledge upon entry to first grade and reading achievement at the end of first grade. For example, Barrett (1965), de Hirsch, et al (1966), Bond and Dykstra (1967) and Dykstra (1967) found letter-name knowledge to be the best single predictor of first grade reading. The addition of factors such as M.A., auditory and visual discrimination, and S.E.S. to a letter identification score contributed little to prediction of first grade reading achievement (Silvaroli, 1965).

The mistake which some educators have made regarding letter knowledge and success in reading is to impute causation to correlational findings. Wilson and Flemming (1937, 1940),

who found correlations of .59 and .62 between letter knowledge and reading achievement, concluded that alphabet knowledge contributed to reading progress.

In the well known Durrell (1958) monograph, Nicholson reported that the correlation between ability to identify lower-case letters and rate of learning to read words was r = .51, which was higher than the correlation between I.Q. (r = .36) and rate of learning to read these words. In the same report, Linehan stated that letter name and sound training seemed to facilitate first grade reading achievement. Since the group which received name and sound training received auditory discrimination training as well, it is impossible to determine if the facilitative effect was produced by name, sound, or discrimination training. Durrell concluded, however, that reading difficulties could be prevented if, in addition to other kinds of training, instruction in letter names and sounds was given.

Whereas correlational studies have found letter name knowledge to be related to reading achievement, experimental classroom studies generally have not. Ohnmacht (1969) used intact classrooms to study the effects of letter name and sound training. One group was given early training in just letter names. A second group was given training in names and sounds. A third group served as a control. She found the group getting training on names and sounds was superior to the other groups. The group getting training only on letter names was no better than the control. Johnson (1969) also found that early classroom training in letter names failed to produce superior end-of-the-year reading

achievement in comparison to the control.

The studies to be reported here represent an attempt to determine under experimental laborabory conditions what component of letter-name training, if any, facilitates reading acquisition. It may be argued that (1) it is only the ability to visually discriminate the letters, one from another, which is important, or (2) it is the ability to visually discriminate each letter and produce its name which is important. A third possibility exists. The correlation between letter-name knowledge and reading achievement is an artifact; that in an experimental setting, subjects getting letter-name training or letter discrimination training, will be no better in learning to read than control subjects getting no training of any kind.

Method - Experiment One

Subjects

One hundred first grade subjects mid-way through the first year of public elementary school were selected and randomly assigned to one of four treatments, placing 25 subjects in each group.

Design

For three of the four groups a learning-transfer design was used. During the learning phase, the letter-discrimination group learned to discriminate one letter from another. The letter-name group learned the names of the letters. Control Group #1 received irrelevant training consisting of learning the names of animals. At transfer, the three groups learned to read the

same set of four words using the same method. Control Group #2 was the exception. This group learned to read the words immediately to determine if the most efficient way to read words might not be to have them presented immediately with no prior training of any kind.

Materials

The graphemes for the letter discrimination and letter-name groups were artificial letters designed to have as little resemblance to English letters as possible. Only four letters were used. Learning Task for the Letter Discrimination Group: Four 5" X 8" index cards were used. At the top of each card a different one of the four artificial letters was printed. Below each artificial letter were four geometric forms: a square, circle, cross, and triangle. The position of the geometric forms was varied from card to card. The task for the subject was to learn which geometric from was to be associated with the artificial letter at the top of the card. The subject indicated his choice by pointing to one of the geometric forms on the card. Learning Task for the Letter-Name Group: Four 5" X 8" index cards were used. The same artificial graphemes used with the Letter-name group were used with this group. In the center of the index card one of the four artificial letters was printed. The task for the subject was to learn to say the letter name assigned to each grapheme. The names assigned were "S", "M", "E", and "A". Learning Trials for Control 1 Group: Four 5" X 8" index cards were used. In the center of each card a different

picture of a dog was printed. The subjects had to learn to say the names of the dogs. Transfer Task for Letter-Discrimination, Letter-Name, Control 1 Groups and the First Task for Control 2: The four artificial graphemes used on the learning task were combined to form four two-letter words. The two-letter words were SE, SA, ME, and MA. The words were pronounced "See," "Say," "Me," and "May." The graphemes were printed on four 5" X 8" index cards, one to a card. The task for the subject was to learn to say the word associated with the stimulus. All subjects regardless of treatment were given the same four words. A paired-associate anticipation method with corrective feedback was used.

Procedure

The experimenter worked with one subject at a time. For all treatments, subjects were given practice trials with specially designed practice stimuli to acquaint them with the nature of the tasks. Following practice, the learning tasks were given. Immediately after criterion was reached on the learning task, the transfer trials were given. During the learning task for the letter-discrimination, letter-name, and Control 1 groups, if the subject did not reach criterion (one perfect trial) by the fortieth trial, he was eliminated and another subject was randomly selected as a replacement. On the transfer task (the first task for Control 2) the subjects were run to one perfect trial or the fortieth trial, whichever came first. During learning and transfer, the cards were presented in random order

at an approximate 3-second rate with feedback on each presentation for all treatments.

Results - Experiment 1

The mean number of trials for each of the groups to reach criterion on the transfer task of reading the words was as follows: Letter-discrimination was 19.80 (S.D. = 13.31), Letter-Name was 17.24 (S.D. = 15.45), Control-1 was 17.36 (S.D. = 11.91), Control-2 was 16.56 (S.D. = 10.82). A t-test indicated no significant difference between the two control groups ($t = < 1$, $df = 48$). For the comparisons, the two controls were combined.

Planned-comparisons were computed. A comparison of Letter-discrimination versus Control-1 and 2 indicated no significant difference ($F = < 1$, $df = 1/96$). A comparison of the Letter-Name versus Control-1 and 2 was not significant ($F = < 1$, $df = 1/96$). A comparison of the Letter-discrimination versus the Letter-Name groups was not significant ($F < 1$, $df = 1/96$).

Since these experimental results did not support the results of the many correlational studies, finding a relationship between letter-name knowledge and reading achievement, another experimental study was done. This second study was done one year later, with a different experimental assistant who was not told the results of the first study and using subjects from different schools.

Method - Experiment 2

Subjects

Seventy-five public elementary school students were used who were mid-way through the first grade. The subjects were

randomly assigned to treatments.

Design

The same learning-transfer design and treatments as described under Experiment 1 were used. One change was made, however. Since in the earlier study no difference was found between the two control groups, only one was used in this study and it was the same as Control-1 in the previous experiment.

Materials and Procedure

The same graphemes, words, materials and procedure were used as in Experiment-1.

Results - Experiment-2

The means for each of the three groups on the transfer task of learning to read the words were as follows: Letter-discrimination was 19.88 (S.D. = 12.43), Letter-name was 16.84 (S.D. = 11.40), and the Control was 22.24 (S.D = 13.49).

Planned comparisons were computed, a comparison of Letter-discrimination versus the control was not significant ($F = < 1$, $df = 1/72$). A comparison of the letter-name versus the Control was not significant ($F = 2.34$, $df = 1/72$). A comparison of the Letter-discrimination versus the Letter-Name was not significant ($F = < 1$, $df = 1/72$).

Discussion

The results of the two experiments indicate that letter-name knowledge does not facilitate learning to read words made-up of the same letters. The fact that subjects in both studies were first graders and well into the process of reading acquisition

amplifies these findings. Had the subjects been kindergarteners and naive to the fact that graphemes and phonomes were combined to form words and that some letter-names were similar to the phonemes they represented, one could argue that the transfer test was inappropriate for their level of sophistication. The fact that two studies failed to find facilitation for the letter-name groups on the transfer tasks strongly suggests that letter-name knowledge does not help the student learn to read. These results support the experimental classroom findings of Johnson (1969) and Ohnmacht (1969) who also failed to find that letter-name knowledge produced greater reading achievement in comparison to the groups which did not get this training.

The failure in the experimental studies to find that letter-name knowledge facilitates word recognition leads one to suspect that the correlational findings between letter-name knowledge and reading may be a product of some other factor such as intelligence or socio-economic status. None of the correlational studies have controlled for these variables.

Stevenson, et al (1968) and Anderson and Samuels (1970) found that paired-associate learning ability is significantly correlated with intelligence. Learning to name letters of the alphabet is a paired-associate task and may be taken as an index of intelligence. Since we already know that in the elementary school I.Q. is highly correlated with reading achievement, it is not surprising that letter-name knwoledge is also correlated with reading achievement.

Another explanation for the correlation between letter-name knowledge and reading achievement is that the kind of home background which enables a child to enter first grade knowing many of the letters of the alphabet would be the kind of home in which academic achievement is stressed. Again, it is well known that socio-economic status and home environment are highly correlated with school achievement.

Although letter-name knowledge does not seem to have any beneficial effect on reading, there is evidence that letter-sound training does have a positive effect. The Linehan and Ohnmacht studies both suggest this. Jeffrey and Samuels (1967) found that when letter-sound training was combined with other types of training suggested by a Gagne-type task analysis, improved reading acquisition resulted.

In the Jeffrey and Samuels (1967) study, a task analysis was done to determine what sub-skills were required in order for the student to independently decode a set of four words. The four words used in the 1967 study were identical to the ones used in this study and the same artificial graphemes were used. A task analysis of the terminal performance indicated that left to right reading training, phonic blend training, and letter-sound training was required. When this combination of sub-skills was provided, the letter-sound trained group was superior to the other groups in independently decoding words, and they learned the set of four words to criterion significantly faster than the other groups. It is important to note that all the groups in the study

got identical sub-skill training. The only difference was that one group got training in letter-sound correspondence. This 1967 study indicates that when letter-sound training is combined with the other prerequisite skills, facilitation in learning to read was produced.

The success of the 1967 study points to the importance of identifying in behavioral terms the specific terminal reading behaviors required. Then a Gagne-type task analysis must be done to determine the sub-skills required for successful completion of the terminal objective. Unfortunately, at the present time in the reading field, this type of task analysis has not been done. What was done in the 1967 study represents only a small part of what should be done for other and more sophisticated reading skills.

Task analysis would suggest that it is not letter-name, but letter-sound training which is useful in facilitating the reading acquisition process. While there is no argument with the importance of letter-name knowledge, it seems ill-advised to suggest to teachers that this type of training will promote reading readiness.

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